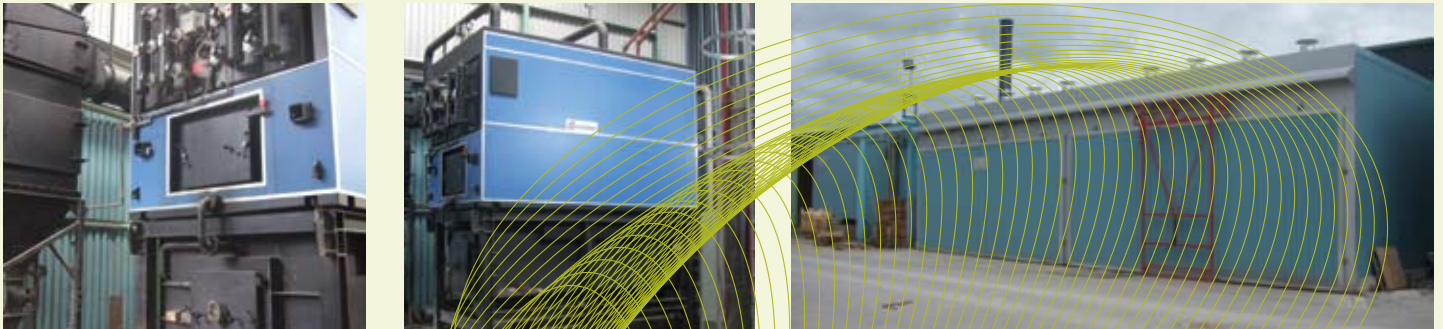


Mid Cork Pallets and Packaging Limited

WOODCHIP BOILER



Technology: 1.8 MW woodchip boiler supplying heat to fire kilns used to dry wood pallets

Location: Mid Cork Pallets and Packaging, Clondrohid, Macroom, County Cork

Results: Oil consumption reduced by 97%, saving 1,100 tonnes of CO₂ emissions and fuel costs savings of €184,000 per annum

Installation Date: September 2006

Owners Perspective

"Absolutely a dream - my oil bill would usually be around €30,000 a month, but last month it was zero. Our fuel requirements are met by residues from our manufacturing process, so for us it's a win-win situation."

Sean Lehane, Managing Director

Organisation/Company

Mid Cork Pallets and Packaging Limited is the biggest manufacturer of wooden pallets in Ireland and the UK, employing 100 people. The company produces over two million pallets per year.

Project Background

Before switching over to the woodchip boiler, Mid Cork Pallets and Packaging Ltd. was using 650 tonnes of fuel per annum in a 1.3 MW oil boiler. As the owner Sean Lehane identifies, the key driver in making the decision to install a wood-fired boiler system was "the price of oil". However, there were also other aspects which attracted the company to the biomass option. The energy-efficient nature of the woodchip boiler appealed to the ethos of the company, which sources all its wood in managed, renewable forests. Using the offcuts in the boiler also provided a safe, clean, convenient and cost-effective way to dispose of the untreated wood residues produced during the manufacture of wooden pallets.

Project Development

The company contracted independent consultant Pat Donohoe in 2006 to conduct a feasibility study for a standard, wood-fired, moving-grate boiler. This showed that installation of the boiler should be straightforward and that it would displace nearly all the oil consumption on site. The company had invested in three new kilns about five years prior to the changeover bringing their total to four kilns on site. This extra capacity was also considered when sizing the woodchip boiler.

The project took about eight months to complete and become fully operational. The installation was problem-free, with only minor modifications to the original plans. The system for carrying the wood residues to the boiler needed adjustment and some work had to be done getting the particle size for the wood fuel right, through a process of trial and error. Originally, the boiler was housed at the back of the plant and protected from the elements by a temporary roof structure, but the company has since built an extension incorporating it.

The woodchip boiler has effectively replaced the oil-fired system, although the original boiler is still used as occasional back-up, for example, if the water temperature drops below a particular level which happens occasionally. Overall though, the woodchip boiler fires the kilns 97% or more of the time.

Plant Operation

The 1.8 MW woodchip boiler, manufactured by Danstoker, is used with a grate produced by Danish Energy, and a shredder from German company Votec. The boiler dimensions are roughly 4 metres long by 2.5 metres wide and 3 metres high. "The challenge for companies thinking of installing one is not the size of the boiler but the capacity for fuel storage required," Pat Donohue says. While 1,000 litres of oil require one cubic metre of storage facilities, the equivalent in wet wood fuel requires ten cubic metres.

The company opted to build a 160 cubic metre storage facility directly above the boiler – enough capacity for about five days' operation. The storage area has a moving floor so the fuel can be conveyed directly into the boiler. The entire system is computer-operated and has proven so efficient that it has spare heat capacity. Mid Cork Pallets

and Packaging Ltd. plan to take advantage of this surplus when they build a new warehouse, or an alternative option is to invest in a fifth kiln.

The boiler requires 30-40 tonnes of wood per week to fire the four kilns. Because Mid Cork Pallets and Packing Limited has its own fuel supply on site, the fuel savings as a result of the new boiler are higher than would be expected for a business requiring fuel deliveries. The boiler is fuelled by shredded offcuts and shavings generated in the manufacturing process. It heats the water which is circulated through the kilns, each capable of drying out 1,250 pallets in a cycle. The cycle can vary from 24 to 36 hours – longer cycles would be required from time to time depending on treatment required and moisture content of the timber. Fans also distribute air through the pallets, heating them up and drying them out. Maintenance needs are the same as for the oil-fired system, with three fitters already employed on site assuming responsibility for routine maintenance and to oversee the boiler's day-to-day operation. In addition to the CO₂ savings from displacing oil, the changeover to the biomass system is also saving further CO₂ emissions by avoiding approximately 150 truck movements, from oil deliveries, to and from the plant.

Key Project Developers/Suppliers

Consultant: Pat Donohoe
Supplier: O'Brien Dust Control
Installer: O'Brien Dust Control
Project Contact: Sean Lehane
Tel: 026 41311

Economic / Environmental benefits

Economic

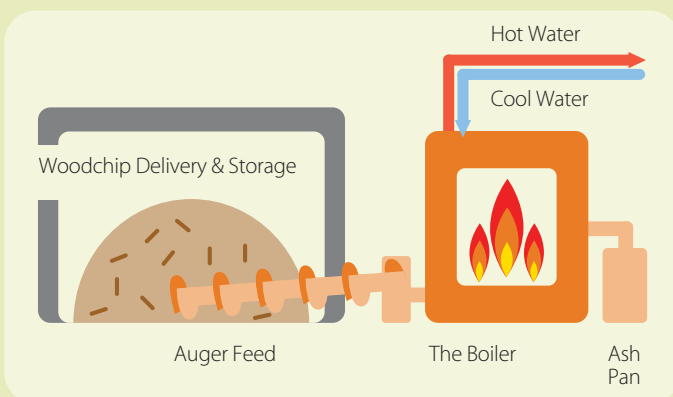
Capital Cost: €550,000
Operating/Fuel Costs: €50,000 per year
 (€15,000 extra power required for chipping fuel)
 (€35,000 depreciation on machinery)
Previous Oil Cost: €234,000 per year
SEI Grant: €67,500

Annual Savings: €184,000 per year
Payback Period (with SEI grant): 2.6 years

Environment

Fuel Displaced: 4,040 MWh (400,000 litres) of oil per year
Annual CO₂ Savings: 1,100 tonnes a year

Technology Principles



Technology Description

Woodchip/pellet boilers burn woodchips/pellets to produce heat. Modern woodchip or pellet boilers are highly efficient, clean burning and fully automatic.

A woodchip/pellet boiler system usually comprises a number of components: the boiler, fuel handling system, water flow and return systems, the fuel reception and storage systems. Woodchip/pellet delivery can be in bulk or bagged form. Fully automatic systems require a bulk storage area so that there is a continuous supply of fuel. Bulk deliveries are usually made by truck and the fuel is then usually either tipped into a below ground storage area or blown into an above ground storage area. The storage area is specially designed to ensure sufficient ventilation and also incorporates some agitating system, such as a moving floor, to assist in the movement of the fuel to the boiler and to ensure that no chips remain unused. An auger system then moves the chips from the storage area to the boiler feed. The fuel is burned in a high efficiency, specially designed boiler. After the wood is burned, ash is collected. The ash produced is not hazardous and can be used as a fertilizer in the garden.